

REMARKS

Please reconsider the application in view of the above amendments and the following remarks. Applicant thanks the Examiner for carefully considering this application.

Disposition of Claims

Claims 1-2 were pending in this application. Claim 2 has been cancelled by this reply. Therefore, only claim 1 is currently pending.

Claim Amendments

Claim 1 has been amended to clarify the invention recited. Support for these amendments, for example, may be found in FIG. 1A and the originally filed claim 2. No new matter has been introduced by these amendments.

Rejection(s) under 35 U.S.C § 102

Claims 1-2 stand rejected under 35 U.S.C. § 102(e) as anticipated by U.S. Patent No. 6,320,135 ("Saito"). Claim 2 has been cancelled, rendering the rejection with respect to claim 2 moot. To the extent this rejection may still apply to the amended claim 1, it is respectfully traversed.

The present invention relates to a flexible sheet-like substrate for manufacturing a multilayer flexible wiring board. Multilayer flexible wiring boards are traditionally prepared by: (1) making individual wiring boards separately; and (2) bonding these layers into a multilayer structure. With this conventional approach, dimensional changes may occur in the individual layers, due to temperature changes, shrinkage, etc. In addition, during manufacturing, different

masks used for different layers may have different degrees of stretching or shrinkage due to various factors (e.g., temperature, humidity, etc.), resulting in individual layers of slightly different dimensions. If the individual layers have different dimensions, it will be difficult to precisely align the layers to produce a multilayer wiring board.

Embodiments of the invention use substrate sheets that include circuit patterns corresponding to individual layers of a multilayer wiring board on the same substrate sheet during the manufacturing process. (see FIG. 1A). This approach ensures that the individual layers in the same multilayer wiring board experience the same environmental effects. In the example shown in FIG. 1A, the individual layers are aligned on the sheet in a direction (Layer Arrangement direction) perpendicular to the transport direction (arrow P) of the sheet. (See specification p. 7, ll. 6–9). In this arrangement, individual layers of the same multilayer wiring board are processed at the same time when the sheet is transported to the processing site. This eliminates or minimizes possible impact from dimensional variations in the flexible substrate sheet or the mask. As a result, the individual layers can be precisely aligned to form the multilayer wiring board. (See specification p. 6, l. 4 through p. 7, l. 5).

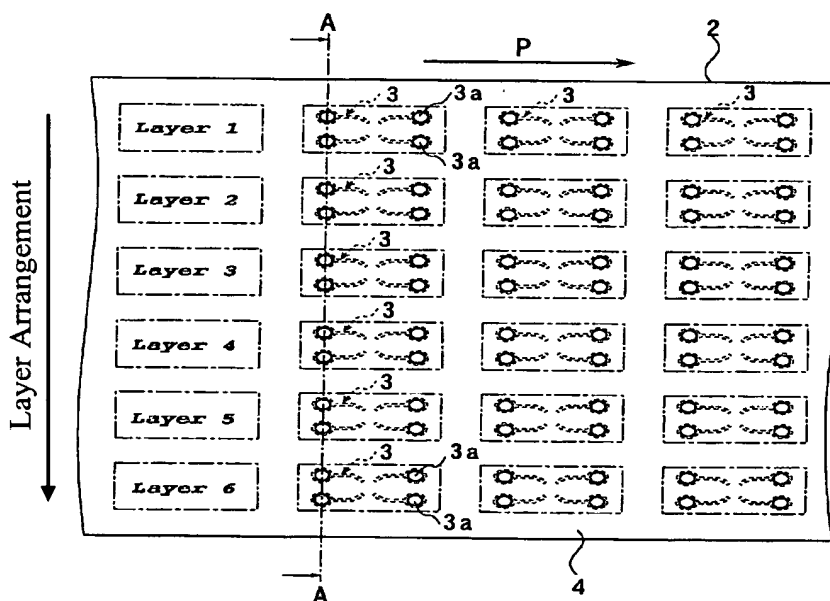
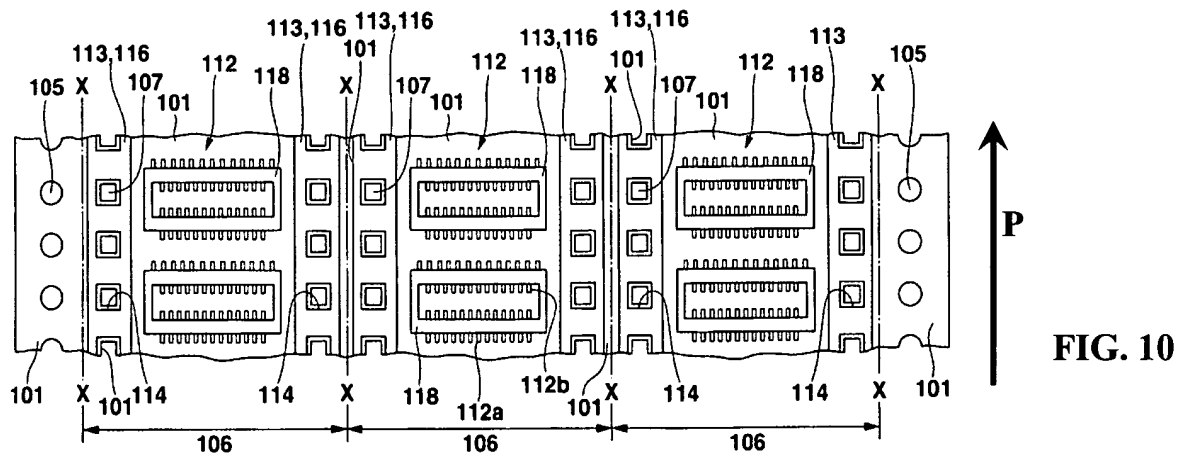


FIG. 1A

Claim 1 recites a stock sheet for a flexible wiring board in accordance with one embodiment of the invention as described above. The stock sheet recited in claim 1 comprises: a flexible sheet-like substrate configured to be transported in a predetermined direction, and a plurality of wiring patterns arranged on the substrate in a direction perpendicular to the predetermined direction, wherein the plurality of wiring patterns correspond to individual layers of a multilayer flexible wiring board.

In contrast, Saito discloses flexible wiring substrates (carrier tapes) of the Chip-On-film (COF) type. The object of the Saito invention is to enable smooth transfer by a pin roller without deforming sprocket holes formed in the tape. (Col. 1, ll. 64-67). The approach is to use reinforcing layers to impart a substantially desirable strength to a portion of the base film near each hole. (Col. 2, ll. 11-14).



As shown in FIG. 10 of Saito, chips 112 are typically aligned on a COF tape in the direction of the transport (arrow P), though several COF tapes (three shown) may be arranged side-by-side for processing. The chips 112 are identical chips and are not meant to be stacked because they are not individual circuit layers (wiring boards) of a multilayer wiring board. Thus, possible dimensional changes in chips 112 are not of concern. Specifically, Saito does not teach or suggest “individual layers of a multilayer wiring board,” nor does it teach or suggest arranging

these layers on a single substrate sheet in a predetermined direction in order to minimize dimensional changes between the individual layers.

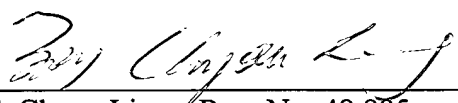
The Examiner asserts that reference numerals 112, 115 are wiring patterns corresponding to patterns on individual layers of wiring boards of a multilayer flexible wiring board, wherein each wiring pattern is arranged in a direction perpendicular to a transporting direction. (Office Action, p. 2). However, as noted above, Saito disclose Chip-On-Film (COF) carrier tapes, and the reference numerals 112, 115 refer to “chips,” not individual layers of a multilayer wiring board. Applicant could not find in Saito any teaching of individual layers of a multilayer wiring board, nor could the Applicant find in Saito any teaching that the individual layers of the same multilayer board are arranged in a direction perpendicular to the direction of transport.

To anticipate, a prior art reference must teach every limitation of the claim. Because Saito does not teach or suggest “a flexible sheet-like substrate configured to be transported in a predetermined direction, and a plurality of wiring patterns arranged on the substrate *in a direction perpendicular to the predetermined direction*, wherein *the plurality of wiring patterns correspond to individual layers of a multilayer flexible wiring board*,” as required by the amended claim 1, the amended claim1 is patentable over Saito. Accordingly, withdrawal of this rejection is respectfully requested.

Applicant believes this reply is fully responsive to all outstanding issues and places this application in condition for allowance. If this belief is incorrect, or other issues arise, the Examiner is encouraged to contact the undersigned or his associates at the telephone number listed below. Please apply any charges not covered, or any credits, to Deposit Account 50-0591 (Reference Number 03310.023001).

Respectfully submitted,

Date: 2/21/05


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